

REMARKS/ARGUMENTS

Favorable reconsideration of this application in view of the following discussion is respectfully requested.

Claims 2-8, 14-23, 25, 28, and 29 are pending. As no claim is currently amended or added, it is respectfully submitted that no new matter is added.

In the outstanding Office Action, Claims 2-8, 14-23, 25, 28, and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Henning (U.S. Publication No. 2003/0156788) in view of Putnam (U.S. Patent No. 5,382,163).

The Office Action takes the position that the information disclosure statement (IDS) filed on March 1, 2010 “fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance...of each patent listed that is not in the English language.” Applicant respectfully traverses this position.

MPEP 609.04(a)(III) states that, regarding the requirement of a concise explanation of relevance for non-English language information, “where the information listed is not in the English language, but was cited in a search report or other action by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office.” It is noted that an English language translation of the relevant portion of the Office Action by the Japanese Patent Office from a corresponding foreign application, which cited the three references listed on the IDS, was filed with the IDS.

Accordingly, Applicant respectfully submits that the IDS filed on March 1, 2010 was fully compliant and requests that an initialed copy of the IDS be provided with the next Office communication.

Turning now to the rejection under 35 U.S.C. § 103(a), Applicant respectfully requests reconsideration of this rejection and traverses this rejection, as discussed below.

Independent Claim 2 recites:

A dental caries detecting device, comprising:

***an ultraviolet light source that irradiates ultraviolet light of at least two different intensities, including ultraviolet light of first intensity and ultraviolet light of second intensity, onto a single measuring area of a tooth;***

a fluorescence receiving portion that receives fluorescence from the single measuring area of the tooth in response to the ultraviolet irradiation of the at least two different light intensities from the ultraviolet light source;

a fluorescence data analysis portion that analyzes fluorescence data transmitted from the fluorescence receiving portion; and

a data display portion that displays data analyzed by the fluorescence data analysis portion, wherein

the fluorescence receiving portion receives first fluorescence by the ultraviolet light of first intensity and transmits first fluorescence data to the fluorescence data analysis portion,

the fluorescence receiving portion receives second fluorescence by the ultraviolet light of second intensity and transmits second fluorescence data to the fluorescence data analysis portion, and

said fluorescence data analysis portion analyzes the first fluorescence data and the second fluorescence data in at least one wavelength band.

Accordingly, independent Claim 2 recites a dental caries detecting device that measures a same area of a tooth with ultraviolet light having different light intensities. Thus, even though the radiated light changes intensity, ***it is still within the ultraviolet light wavelength range***. The fluorescence data changes in response to the change in the irradiation

intensity because the fluorescence intensity changes according to the intensity of the ultraviolet beam.<sup>1</sup>

It is respectfully submitted that the cited references do not disclose or suggest every feature recited in independent Claim 2.

Henning describes a method and apparatus for detecting the presence of caries in a tooth by irradiating the tooth using different wavelength ranges.<sup>2</sup> Specifically, as explained in paragraph [0010] of Henning, “the invention is based on the discovery” that the reflection from cementum and the reflection from a calculus layer are different *for different wavelength ranges*. Henning describes in paragraph [0026] that the intensity is varied between the *two wavelength ranges* (ultraviolet and infrared) used to measure the tooth so that “the signal reflected from healthy cementum is approximately the same in both wavelength ranges.” Thus, Henning does not disclose or suggest measuring the fluorescence generated from a tooth irradiated with light having different intensities within the same wavelength range.

Accordingly, the Office Action, in section 2 on page 3, acknowledges that Henning does not specifically teach that the irradiated light of different intensities are both in the ultraviolet range. Instead, the Office Action takes the position that “it would have been obvious to one having ordinary skill in the art at the time of the invention to select the intensities of the irradiation in any known range in order to detect preferred defects on the tooth.” Applicant respectfully traverses this position.

On the contrary, as discussed above, the method described in Henning is entirely based on the idea that healthy and non-healthy teeth reflect light *from different wavelength ranges* differently. Modifying Henning to compare the reflection of irradiated light from the same wavelength would change the principle of operation upon which Henning is based.

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<sup>1</sup> See the original specification, for example, at page 14, line 2 to page 15, line 3 and in Figures 3 and 6.

<sup>2</sup> See Henning, at paragraph [0026].

MPEP 2143.01 (VI). Accordingly, it respectfully submitted that a *prima facie* case of obviousness has not been established.

Further, it is noted that Henning only describes changing the light intensity of the irradiated light *between different wavelength ranges*. Specifically, Henning states in paragraph [0026] that “the radiation intensity in the near UV spectral range is approximately twice as high as that in the NIR spectral range.” Thus, in Henning, all of the light that is irradiated at an ultraviolet wavelength is *at the same intensity*. Accordingly, if the modification to make all of the irradiated light of Henning ultraviolet is deemed to be proper, then Henning does not disclose or suggest that the light in the ultraviolet range would have different intensities. Further, Putman does not cure these deficiencies of Henning.

Additionally, it is noted that Henning measures the radiation intensity of each wavelength with respect to different locations of the tooth, i.e., a healthy area and a dental caries area of a tooth. In this case, a person of ordinary skill in the art would fix the intensity of the irradiated light, because if the intensity is changed, the apparatus cannot see whether the change of the radiation intensity is caused by the change of wavelength or by the condition of the tooth.

When the measuring conditions are partly changed, such as the location being measured, it is common knowledge in the art that the other measuring conditions remain the same without change. Therefore, in order to detect dental caries, Henning should make a comparison using the same intensity of irradiation light, since the measurement is done for the radiation intensity of each wavelength with respect to the different locations of the tooth.

Therefore, the cited combination of references does not disclose or suggest “an ultraviolet light source that irradiates ultraviolet light of at least two different intensities, including ultraviolet light of first intensity and ultraviolet light of second intensity, onto a single measuring area of a tooth.” Thus, it is respectfully requested that the rejection of

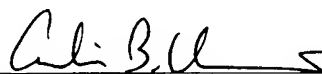
Claim 2, and all claims dependent thereon, as unpatentable over Henning in view of Putman be withdrawn.

Regarding independent Claims 14 and 23, while directed to an alternative embodiments, it is noted that these claims recite features similar to those discussed above with respect to Claim 2. Thus, it is respectfully submitted that Claims 14 and 23 patentably define over Henning in view of Putman for at least the reasons discussed above with respect to Claim 2. Therefore, it is also respectfully requested that the rejection of Claims 14 and 23, and all claims dependent thereon, as unpatentable over Henning in view of Putman be withdrawn.

Consequently, in view of the present response, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for allowance. A Notice of Allowance is earnestly solicited.

Respectfully submitted,

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